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PATENT APPLICATION
Docket No.: 14531.107.1.3



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of)
Fenster et al.)
Serial No.: 09/770,767)
Confirmation No.: 7766)
Filed: January 25, 2001)
For: MULTIMEDIA STREAM COMPRESSION)

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the application, Applicants respectfully request entry of the following amendment.

IN THE CLAIMS:

Please cancel Claims 1- 83 and add new claims 84 - 133 as follows:

84. A method of generating a compressed video stream, comprising:
receiving a plurality of display commands; and

directly converting said commands into a compressed video stream, without first generating a display raster.

85. A method as recited in claim 84 wherein said converting comprises motion estimation.

86. A method as recited in claim 84 wherein said converting comprises change detection.

87. A method of generating a compressed video stream, comprising:
providing a plurality of display commands;
directly setting values in a transform space, responsive to said display commands; and
creating a compressed video stream utilizing said set values.

88. A method according to claim 87, wherein said transform space comprises a DCT space.

89. A method according to claim 87, wherein directly setting comprises utilizing transform coefficients from a look-up table.

90. A method according to claim 87, wherein directly setting comprises copying transform coefficients from a look-up table of transformed graphical primitives.

91. A method according to claim 87, wherein directly setting comprises copying transform coefficients from a cache of transformed image portions.

92. A method according to claim 87, wherein directly setting comprises rendering said display command into said transform space utilizing an analytical formula associating a graphical primitive defined by said display command with said transform space.

93. A method according to claim 87, comprising, modifying at least one of said display commands so that a graphical primitive defined by said at least one display command does not straddle an image block, for which block a set of transform coefficients are defined according to a compression protocol utilized by said compressed image stream.

94. A method of generating a compressed video stream, comprising:
generating a plurality of display commands which represents a display, by a program;
modifying at least one of said display commands, independently of said program; and
generating a compressed video stream utilizing said display commands.

95. A method according to claim 94, wherein said modifying comprises modifying said commands to responsive to limitations of a display device on which said compressed video stream is to be displayed.

96. A method according to claim 94, wherein modifying comprises modifying said commands to reduce bandwidth requirements of said compressed video stream.

97. A method according to claim 94, wherein modifying comprises modifying said commands to reduce resource requirements for compressing said compressed video stream.

98. A method according to claim 94, wherein at least one of said display commands represents an object and wherein said modifying comprises changing said at least one display command such that the object is moved relative to its original display position.

99. A method according to claim 98, wherein said compressed video stream comprises utilizes blocks having boundaries and wherein moving comprises moving said object to match at least one compression block boundary.

100. A method according to claim 94, wherein at least one of said display commands represents an object and wherein said modifying comprises replacing said object with a different object.

101. A method according to claim 100, wherein replacing said object comprises replacing said object with a compressed representation of said different object.

102. A method according to claim 100, wherein said object comprises a text object.

103. A method according to claim 100, wherein said object comprises a background of said display.

104. A method according to claim 100, comprising analyzing said object to determine a closest suitable replacement object.

105. A method according to claim 94, wherein modifying said object comprises changing a font definition for said object.

106. A method according to claim 94, wherein modifying said object comprises modifying at least one color of said object.

107. A method according to claim 106, wherein modifying a color comprises reducing a spatial resolution of said colors.

108. A method according to claim 106, wherein modifying a color comprises reducing a color range resolution of said colors.

109. A method according to claim 94, wherein modifying said object comprises reducing a spatial resolution of said object.

110. A method according to claim 94, wherein at least one of said display commands comprises a scrolling command and wherein said modifying comprises increasing a granularity of said scrolling.

111. A method according to claim 110, wherein said increasing a granularity comprises limiting said scrolling command to multiples of compression blocks size of said compressed stream.

112. A method of generating a compressed video stream, comprising:
 generating a plurality of display commands which represents a display;
 generating a plurality of transform coefficients from said display commands,
 wherein said transform coefficients are quantized and wherein said quantization is
 modified responsive to limitations a display device on which said compressed video
 stream is to be displayed; and
 creating a compressed video stream utilizing said coefficients.

113. A method according to claim 113, wherein said coefficients are quantized at a
 lower resolution in a vertical direction of said display.

114. A method of generating a compressed video stream, comprising:
 accumulating a plurality of display commands;
 identifying at least one display command of said plurality, whose effect is
 mooted by a later accumulated display command; and
 converting said commands into said compressed video stream, ignoring the
 mooted display command.

115. A method according to claim 114, wherein said mooted display command is
 ignored if its effect on said compressed video stream, in view of said later command, is below
 a threshold value.

116. A method according to claim 114, wherein converting said commands
 comprises combining display commands.

117. A method according to claim 114, wherein said converting comprises directly converting said commands into said compressed video stream without first generating an image raster.

118. A method of generating a compressed video stream, comprising:
generating a plurality of display commands;
accumulating at least one display command; and
generating a compressed video stream from said accumulated display commands, wherein accumulating comprises accumulating a number of display commands responsive to instantaneous available resources.

119. A method according to claim 118, wherein generating a compressed video stream is un-synchronized relative to said generation of display commands.

120. A method according to claim 119, wherein said display commands are generated in sets, each set associated with a display frame and wherein said accumulating, in a single accumulation set, display commands originating from different sets, wherein said single accumulations set is utilized for generating a single frame of said compressed video stream.

121. A method according to claim 118, comprising assigning a priority to a display command.

122. A method according to claim 121, comprising reordering said accumulated display commands, responsive to said priority, wherein generating a compressed video stream comprises generating a first frame in said compressed video stream utilizing an originally later display command, prior to generating a frame in said stream utilizing an originally earlier display command.

123. A method of generating a compressed video stream, comprising:

generating a plurality of display commands;

accumulating at least one display command;

generating a compressed video stream from said accumulated display commands, wherein accumulating comprises accumulating a number of display commands responsive to a desired output frame rate.

124. A method according to claim 123, wherein generating a compressed video stream is un-synchronized relative to said generation of display commands.

125. A method according to claim 124, wherein said display commands are generated in sets, each set associated with a display frame and wherein said accumulating, in a single accumulation set, display commands originating from different sets, wherein said single accumulations set is utilized for generating a single frame of said compressed video stream.

126. A method according to claim 123, comprising assigning a priority to a display command.

127. A method according to claim 126, comprising reordering said accumulated display commands, responsive to said priority, wherein generating a compressed video stream comprises generating a first frame in said compressed video stream utilizing an originally later display command, prior to generating a frame in said stream utilizing an originally earlier display command.

128. A method of generating a compressed video stream, comprising:

executing a program, which program generates a set of display commands, representative of a display;

identifying changes in said display which are responsive to at least one type of user command; and

converting said display commands into a compressed video stream, wherein said changes are inserted into said compressed video stream at a higher frame rate than other changes in said display.

129. A method according to claim 128, wherein said type of user command comprises a pointing device command.

130. A method according to claim 128, wherein said changes comprises an indication of a selection of a GUI (graphical user interface) element.

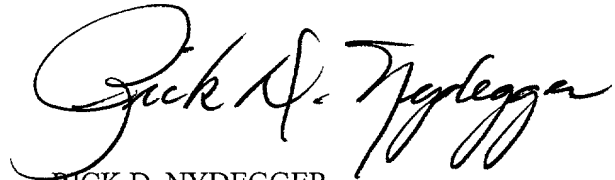
131. A method according to claim 128, comprising analyzing said user command to determine display commands which effect said identified changes.

Consideration of the application is respectfully requested in view of the foregoing amendments.

Please direct any inquiries concerning this correspondence to the undersigned.

Dated this 27th day of April, 2001.

Respectfully submitted,



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